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## Indian Standard

# SPECIFICATION FOR DRIED ICE-CREAM MIX

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INDIAN STANDARDS INSTITUTION MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG NEW DELHI 110002

### Indian Standard

### SPECIFICATION FOR DRIED ICE-CREAM MIX

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### Indian Standard

## SPECIFICATION FOR DRIED ICE-CREAM MIX

#### O. FOREWORD

- **0.1** This Indian Standard was adopted by the Indian Standards Institution on 30 October 1975, after the draft finalized by the Dairy Products Sectional Committee had been approved by the Agricultural and Food Products Division Council.
- **0.2** Dried ice-cream mix is being increasingly used and marketed in the country. In order to help in proper quality control and production of this product in the country, this standard is being published.
- **0.3** While formulating this standard, necessary consideration has been given to the relevant rules prescribed by the Government of India under the Prevention of Food Adulteration Act, 1954. This standard is subject to restrictions imposed under the Act and the Rules framed thereunder wherever applicable.
- 0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

#### 1. SCOPE

1.1 This standard prescribes the requirements and methods of sampling and test for dried ice-cream mix.

#### 2. REQUIREMENTS

- 2.1 General Ice-cream mix shall contain the entire amount of refined sugar as required in the reconstituted ice cream. It shall also contain milk solids, sucrose or corn syrup or both; and permitted flavours, stabilizers, emulsifiers and antioxidants. It may also contain the permitted colours. Milk solids shall comprise milk and milk products obtained from milk of cow, buffalo or a mixture thereof.
- 2.1.1 Dried ice-cream mix shall be the material prepared by spray or roller drying of ice-cream mix as mentioned in 2.1 and shall not contain

<sup>\*</sup>Rules for rounding off numerical values (revised).

any added preservative. Refined sugar used in the manufacture of dried ice-cream mix shall conform to IS: 1679-1960\*.

- 2.2 The dried ice-cream mix shall be free from lumps except those that break up readily under slight pressure and shall be reasonably free from scorched particles. It shall also be free from dirt and other extraneous matter. The flavour and the odour of dried ice-cream mix or the reconstituted mix shall be sweet and clean.
- 2.3 The product shall be processed, packed, stored and distributed under strict hygienic conditions (see IS: 2491-1972†).
- 2.4 Stabilizers and emulsifiers as permitted under the Prevention of Food Adulteration Rules, 1955 not exceeding 1.25 percent by mass of the dried ice-cream mix, may be used.
- 2.5 The dried ice-cream mix shall also comply with the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR DRIED ICE-CREAM MIX SLCHARACTERISTIC REQUIREMENT METHOD OF TEST. No. REF TO Appendix Other Indian Standards (1)(2)(3)(4)(5)i) Moisture, percent by mass, Max Appendix B of IS: 1165-1975\* Milk fat, percent by mass, Min 27 Α iii) Sucrose, percent by mass, Max 40 Appendix E of IS: 2802-1964† iv) Titratable acidity (as lactic 1.25 В acid), percent by mass, Max v) Solubility index, Max 2.0 ml Appendix G of ĬŠ: 1547-1968‡ Bacterial count per gram, Max 50 000 IS: 5402-1969§ vii) Coliform count per gram, Max 90 IS: 5401-1969|| viii) Milk proteins, percent by mass, 9.5 IS: 7219-1973¶ Min

NOTE — The titratable acidity shall be determined only for mixings not containing colour.

<sup>\*</sup>Specification for milk powder (second revision).

<sup>†</sup>Specification for ice-cream.

Specification for infant milk foods (first revision).

<sup>§</sup>Method for plate count of bacteria in foodstuffs.

Methods for detection and estimation of coliform bacteria in foodstuffs.

Method for determination of protein in foodstuffs and feeds.

<sup>\*</sup>Specification for refined sugar used in food preservation industry.

<sup>†</sup>Code for hygienic conditions for food processing units (first revision).

#### 3. PACKING AND MARKING

- 3.1 Packing The material shall be packed in hermetically sealed, clean sound containers, unless otherwise agreed between the purchaser and the supplier, in such a way as to protect it from deterioration. It shall be packed in nitrogen or a mixture of nitrogen and carbon dioxide, if desired by the purchaser.
- **3.2 Marking** The following particulars shall be marked or labelled on each container:
  - a) Name and type of the material;
  - b). Name of manufacturer;
  - c) Batch or code number;
  - d) Month and year of pre-packing;
  - e) Net mass; and
  - f) Details of reconstitution.
- 3.2.1 The container may also be marked with the ISI Certification Mark.

Note — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

#### 4. SAMPLING

**4.1** The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in Appendix C.

#### 5. TESTS

- 5.1 Tests shall be carried out as prescribed in col 4 and 5 of Table 1.
- 5.2 Quality of Reagents Unless specified otherwise, pure chemicals and distilled water (see IS: 1070-1960\*) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

<sup>\*</sup>Specification for water, distilled quality (revised).

#### APPENDIX A

[ Table 1, Item ( ii ) ]

#### DETERMINATION OF MILK FAT

#### A-1. APPARATUS

A-1.1 The apparatus shall be the same as in 5.1 of IS: 1479 (Part II)-1961\*.

#### A-2. REAGENTS

- A-2.1 Concentrated Hydrochloric Acid sp gr 1.16.
- A-2.2 Ethyl Alcohol 95 to 96 percent.
- A-2.3 Diethyl Ether (Free from Peroxide) sp gr 0.72.

NOTE — Diethyl ether may be maintained free from peroxide by adding wet zinc foil (approximately 80 cm<sup>2</sup> per litre, cut in strips long enough to reach at least half way up the container) that has been completely immersed in dilute acidified copper sulphate for one minute and subsequently washed with water.

- A-2.4 Light Petroleum boiling range 40 to 60°C.
- **A-2.5 Mixed Solvent** prepared by mixing equal volumes of the ether and light petroleum.
- A-2.6 Ammonium Hydroxide sp gr 0.90.

#### A-3. PROCEDURE

**A-3.1** Weigh accurately about 1 g of the material in a small beaker. Add 1 ml of water and rub to smooth paste by using glass rod. Add 9 ml of water, the first few drops being used to wash the tip of the glass rod. Add two drops of ammonium hydroxide and warm on a clean bath. Add 10 ml of hydrochloric acid and mix thoroughly but without splashing the contents. Transfer to the Mojonnier fat extraction flask or the fat extraction tube. Heat in water-bath for 20 minutes at 60°C with occasional shaking. Add 10 ml of ethyl alcohol, mix well and proceed further as in **5.3** of IS:1479 (Part II)-1961\*.

<sup>\*</sup>Method of test for dairy industry: Part II Chemical analysis of milk.

#### APPENDIX B

[ Table 1, Item (iv) ]

#### DETERMINATION OF TITRATABLE ACIDITY

B-0. The acidity of the dried ice-cream mix would be determined only for mixes which do not contain added colour.

#### **B-1. APPARATUS**

B-1.1 The apparatus shall be the same as in 14.1 of IS: 1479 (Part I)-1960\*.

#### **B-2. REAGENTS**

B-2.1 The reagents shall be the same as in 14.2 of IS: 1479 (Part I)-1960\*.

#### **B-3. PROCEDURE**

B-3.1 Weigh accurately about 10 g of the material into a beaker or an Erlenmeyer flask. Make up the volume to 100 ml in a volumetric flask with luke warm water. Mix thoroughly, preferably with a mixer. Transfer 20 ml to a porcelain dish. Add 1 ml of the phenolphathalein indicator solution and titrate with standard sodium hydroxide solution using another portion of the sample in a similar dish for the purpose of comparison. The persistence of a pinkish tinge for 30 seconds indicates the end point.

#### **B-4. CALCULATION**

**B-4.1** Titratable acidity (as lactic acid) percent by mass =  $\frac{45 \text{ }AN}{M}$  where

A = volume in ml of standard sodium hydroxide solution required for titration.

 $\mathcal{N} =$  normality of standard sodium hydroxide solution, and

M =mass in g of the material taken.

<sup>\*</sup>Method of test for dairy industry: Part I Rapid examination of milk,

#### APPENDIX C

( Clause 4.1 )

#### SAMPLING OF DRIED ICE-CREAM MIX

#### C-1. GENERAL REQUIREMENTS

- C-1.0 In drawing, preparing, storing and handling samples, the precautions and directions given under C-1.1 to C-1.6 shall be observed.
- C-1.1 Samples shall be taken in a protected place not exposed to damp air, dust or soot.
- C-1.2 The sampling instrument shall be clean and dry when used. When taking samples for bacteriological examination, it shall be sterile.
- C-1.3 Precautions shall be taken to protect the samples, the material being's sampled, the sampling instrument and the containers for samples from adventitious contamination.
- **C-1.4** The samples shall be placed in clean and dry glass containers. The sample containers shall be of such a size that they are almost completely filled by the sample. The sample containers shall in addition be sterile when they are used for samples for bacteriological examination.
- C-1.5 Each container shall be sealed air-tight after filling and marked with full details of sampling, batch or code number, name of the manufacturer and other important particulars of the consignment.
- C-1.6 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

#### C-2. SCALE OF SAMPLING

- **C-2.1 Lot** All the containers in a single consignment of one type of material drawn from a single batch of manufacture shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and the group of containers in each batch shall constitute separate lots.
- **C-2.1.1** Samples shall be tested from each lot for ascertaining its conformity to the requirements of this standard.
- C-2.2 The number of containers to be selected from the lot shall depend on the size of lot and shall be as given in Table 2.

TABLE 2 NUMBER OF CONTAINERS TO BE SELECTED FOR SAMPLING

(Clauses C-2.2 and C-2.3)

LOT SIZE	Sample Size ( for Tests Other than Microbiological)	Sub-sample Size ( for Microbiological Tests )	
(1)	(2)	(3)	
2 to 25	2	1	
26 ,, 100	3	1	
101 ,, 300	5	2	
301 ,, 500	7	3	
501 and above	9	4	

C-2.3 The containers shall be chosen at random from the lot, and for this purpose a random number table (see IS: 4905-1968\*) as agreed to between the purchaser and the supplier shall be used. If such a table is not available, the following procedure shall be adopted:

Starting from any container, in any order, count them as 1, 2, 3,.... etc, up to r and so on in a systematic manner and withdraw the rth container; r being the integral part of N/n where N is the total number of containers and n the number of containers to be selected according to col 2 or 3 of Table 2.

#### C-3. TEST SAMPLES AND REFEREE SAMPLES

C-3.1 Preparation of Individual Sample — Draw with a suitable sampling instrument approximately equal quantities of the material from different parts of the container till about 500 g of the material are obtained. From this take about 150 g of the material and divide it into three equal parts. Each part so obtained shall constitute an individual sample representing the container and shall be transferred immediately to thoroughly clean and dry containers sealed, air-tight and labelled with particulars given under C-1.5. The individual sample so obtained shall be divided into three sets in such a way that each set has a sample representing each selected container. One of these shall be marked for the purchaser, another for the supplier and the third for the referee.

C-3.2 Preparation of Composite Sample — From the material from each selected container, remaining after the individual sample has been taken approximately equal quantities of the material shall be taken and mixed together so as to form a composite sample weighing about 600 g. This composite sample shall be divided into three equal parts and transferred to clean and dry containers, sealed air-tight and labelled with the particulars given in C-1.5. One of these composite samples shall be for the purchaser another for the vendor and the third for the referee.

<sup>\*</sup>Methods for random sampling.

#### **IS: 7839 - 1975**

- C-3.3 Preparation of Samples for Microbiological Examination From the selected containers select a sub-sample according to col 3 of Table 2. Draw with a suitable sampling instrument, which is sterile at least 100 g of the material and mix thoroughly under aspectic conditions to form a sample of container for microbiological examination. Divide sample (taking care not to bring in microbiological contamination in the material) into three equal parts. Each part so obtained shall constitute a sample representing the container and shall be transferred to sterile glass containers, sealed airtight and labelled with particulars given in C-1.5. They shall be marked, in addition, with the words, 'For Microbiological Examination'. The samples so obtained shall be divided into three sets in such a way that each set has a sample representing each selected container. One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee.
- **C-3.4 Referee Samples** Referee samples shall consist of a set of individual samples (**C-3.1**) and a composite sample (**C-3.2**) and a set of samples for microbiological examination (**C-3.3**) marked for this purpose and shall bear the seals of the purchaser and the vendor. These shall be kept at a place as agreed to between the two.

#### C-4. NUMBER OF TESTS

- **C-4.1** Test for determination of moisture, milk fat, milk proteins and solubility index shall be conducted on each of the samples constituting a set of individual samples.
- C-4.2 Tests for general requirements (2.1, 2.1.1 and 2.2), sucrose and titratable acidity shall be conducted on the composite sample.
- **C-4.3** Test for bacterial count and coliform count shall be conducted on each of the samples constituting a set of test samples labelled with the words 'For Microbiological Examination'.

#### C-5. CRITERIA FOR CONFORMITY

- C-5.1 A lot shall be declared as conforming to all the requirements of this specification when C-5.1.1 to C-5.1.3 are satisfied.
- **C-5.1.1** The test results, on each of the individual samples for determination of moisture, milk fat, milk protein, solubility index shall satisfy the corresponding requirements as given in Table 1.
- C-5.1.2 The test results on the composite sample for general requirements (2.1, 2.1.1 and 2.2) sucrose, and titratable acidity shall satisfy the corresponding requirements as given in Table 1.
- **C-5.1.3** The test results for bacterial count and coliform count shall satisfy the corresponding requirements as given in Table 1.

#### (Continued from page 2)

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## INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

QUANTITY	UNIT	SYMBOL	
Length	metre	m	
Mass	kilogram	kg	
Time	second	S	
Electric current Thermodynamic	ampere kelvin	A K	
temperature	KCIVIII	•	
Luminous intensity	candela	cd	
Amount of substance	mole	mol	
Supplementary Units			
QUANTITY	UNIT	SYMBOL	
Plane angle	radian	rad	
Solid angle	steradian	ST	
Derived Units			
QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	$1 \text{ N}' = 1 \text{ kg.m/s}^2$
Energy	joule	J	1J = 1  N.m
Power	watt	w	1 W - 1 J/s
Flux	weber	Wb	1 Wb = 1 Vs
Flux density	tesla	T	$IT = 1 \text{ Wb/m}^2$
Frequency	hertz	Hz	1 Hz = 1 c/s (s-1)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	v	1 V = 1 W/A
Pressure, stress	pascal	Pa	$1 \text{ Pa} = 1 \text{ N/m}^2$

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